The Eclipse of August 19, 1887.

THIS eclipse will be seen over such an extent of territory that it is desirable to make the best use of the opportunity offered. The astronomical observations I do not mention, but besides them the following would be very important, and could be made by travellers alone, and those who do not take with them heavy and troublesome instruments :—

Observations every ten minutes on the *pressure* and *temperature* of the air from the beginning of the eclipse to about half an hour after its end ; and, some days before and later, every hour, at the hours of the eclipse.

The *barometer* might as well be an aneroid, but with large divisions ; a pocket instrument would be too small. Relative and not absolute measures are intended, and it is especially necessary that the instrument be not sluggish.

The *thermometer* preferable for the observations should be a sling-thermometer (Frowde), as one in a thermometer-stand and not swung could not follow rapidly enough the changes of temperature. It would be best to swing it at the height of the shoulder.

Observations on *cloud, direction* and *force of wind*, every half hour the day of the eclipse and every hour before and later.

Some observations on the colour of the sky, &c., and on the influence of the eclipse on animals, domestic and wild, would be useful.

The eclipse will be visible in Eastern Germany, but at so early an hour in the morning that there will be comparatively little interest in meteorological observations. Russia (especially Eastern) and Western and Central Siberia give much better opportunities of observation. I give below some notices on the amount of cloud ; the stations are disposed from west to east, the mean is that of three observations, 7 a.m., 1 p.m., and 9 p.m. The conditions as to cloudiness will be better than those indicated here, in Eastern Russia and Siberia to nearly Lake Baikal, as the eclipse will be seen in the later morning hours, which have a smaller amount of cloud than 7 a.m. and 1 p.m.

Amount of Cloud.

	Mean	7 a.m.
Rjev, Government of Tver	57	49
Moscow	57	50
Academy of Petrovsky, near Moscow	51	
Rojdestwenskoye, Government of Kostroma	60	61
Kasan	58	55
Viatka	53	51
Ekaterinburg	68	67
Nijnetaguilsk	64	
Bogoslovsk	57	
Irbit	53	
		1 p.m.
Irbit		69
Yeniseisk	53	
Irkutsk	49	48
Foundry of Nertschinsk	53	59
Niigata, west coast of Nippon	55	

I give a list of some places where tolerably good accommodation is to be found, with the time of travel from the nearest railway-station :—

Tver, Torjok, Moscow,[1] Yaroslav,[2] Kostroma (three hours' steamer from latter point), Schuja, Ivanovo-Wosnessensk, Kineschma, Vladimir, Viatka (steamer on Volga, Kama, and Viatka, from Nijni-Novgorod, in three days), Perm (steamer from Nijni-Novgorod in eighty-five hours.

Nijnetaguilsk, with important foundries, malachite mines, &c., reached by railroad from Perm in fifteen hours.

Tobolsk, by rail from Perm to Tjumen in about thirty hours, thence by steamer in two days, twice a week. It is well to telegraph beforehand to retain a cabin.

Tomsk by steamer from Tjumen in about eight days, by the Tura, Tobol, Irtysch, and Ob.

The places eastward, the most favourable for observation, can be reached by road only from Tomsk. Post-horses everywhere available, rapid travelling in good weather, but bad carriages.

To astronomers bringing with them bulky instruments, the water-ways are to be recommended. St. Petersburg is in easy steamer communication with British harbours, and thence luggage can be sent by water to all parts of the Volga basin. So far as known at present, it is intended that there shall be observations of the eclipse at five points : (1) the observatory of General Maiewsky, Government of Tver ; (2) the estate of Count Olsuffiew, district Dmitrov, Government of Moscow ; (3) the estate of Prof. Bredichin, district Kineschma, Government of Kostroma,—two English astronomers are expected ; (4) Glasov, Government of Viatka ; (5) Krasnoiarsk, on the Yenisei.

A. WOEIKOF.

Iridescent Clouds.

THE clouds seen by Prof. Stone, as described in NATURE, vol. xxxv. p. 581, may have been of the same character (though I cannot judge positively from the description) as those so extensively observed in the Decembers of 1884 and 1885 ; if so, it is the only account I have read of their being seen last winter. Those described by Mr. McConnel, writing from St. Moritz, Switzerland (p. 533), are evidently of a totally different character, and I suppose simply the ordinary iridescent clouds which are common everywhere.

T. W. BACKHOUSE.

Sunderland.

Remarkable Hailstones.

MAY I ask for space to make a suggestion as to the possible cause of the banded structure of hailstones recently observed and recorded in NATURE, vol. xxxv. p. 438? It seems to me that the phenomenon may perhaps be explained by *devitrification of the ice*. We are familiar with a considerable number of bodies which assume the vitreous state by rapid solidification from the liquid state ; and it seems reasonable to suppose that in the conditions under which hail is formed the ice may assume at first the vitreous state, the higher molecular structure of perfectly crystalline ice requiring more time for its full development (see paper by the writer read before Section C of the British Association last year at Birmingham). If such were the case (and the hypothesis is supported by the statement of Mr. C. S. Middlemiss in NATURE, vol. xxxv. p. 413), the observed structure (which can be actually seen to develop itself in some vitreous substances under the microscope, as a preliminary to the assumption of the full crystalline and opaque condition) would simply mark an early stage of the devitrification of the ice-glass. To bring this theory to the test of experiment it would only be necessary to observe closely the effect of keeping such hailstones for some time at a temperature rather below 0° C.

A. IRVING.

Wellington College, Berks, May 14.

The Orbit of the Minor Planet Eucharis.

ON reading your note (p. 16) on the determination of the orbit of the planet *Eucharis*, by Dr. de Ball, and the discordances between his observations and those obtained with the Washington meridian instrument, I am reminded of an earlier case which seems to me to be analogous.

Hansen drew attention to the very material difference between the observations of *Egeria* in 1864 at Bonn and Leyden. This discrepancy between observations which otherwise harmonized well amounted to 10″ in R.A., and occasioned a protracted inquiry by Argelander (*Astron. Nachr.*, No. 1769), in which he came to the conclusion that the reason probably lay in the personal error of the Leyden observer in the observation of bright and faint stars. As I am not acquainted with Dr. de Ball's treatise, I cannot judge whether respect was paid to such differences in isolated cases.

W. VALENTINER.

Karlsruhe Observatory, May 8.

A Question for Chemists.

YOUR correspondent, Mr. West, will find reference to the fact that a mixture of glycerine and potassium permanganate is liable to spontaneous combustion in the "Extra Pharmacopœia" of Martindale and Westcott, fourth edition, p. 292.

Dublin.

HARRY NAPIER DRAPER.

"A Junior Course of Practical Zoology."

IN a recent notice of "A Junior Course of Practical Zoology" (NATURE, vol. xxxv. p. 506) the reviewer expresses surprise

---

[1] Just at the southern limit, it would be better to observe somewhat to the north.

[2] See Mackenzie-Wallace's "Russia."

©1887 Nature Publishing Group

that anyone should, in a text-book for students, "discard the ophthalmic somite of their seniors, and press the telson into the service," a procedure on which he comments thus:—"The introduction of so sweeping a change into a book for juniors, without due comment is, under these circumstances, a false step, especially when it is considered that the precise converse is stated in all other books current."

Now Claus in his text-book says (I quote from the English edition):—"The facetted eyes are borne on two movably separated stalks. These were for a long time considered as the anterior pair of appendages, while in fact they are merely lateral portions of the head which have become jointed"; and elsewhere: "The last abdominal segment, which is transformed into a telson."

Gegenbauer in his text-book says:—"The projecting character of the eye, owing to its curvature, may lead to a stage in which the eye is stalked. When still more developed, this stalk may become movable"; and nowhere speaks of the stalk as the homologue of an appendage.

Prof. Lankester's pupils are all taught to regard the telson as a somite and the "ophthalmic somite" as an erroneous interpretation of parts.

I fail to see, therefore, that Prof. Marshall need offer any excuse for his method of counting the segments, nor, in an elementary text-book, discuss a question on both sides of which there is avowedly much to be said.

I may note with regard to one other criticism that, although there is nothing "irrelevant or absolutely fantastic" about the term commissure, it is convenient to distinguish between "commissures connecting two ganglia of the same pair" and "connectives connecting ganglia of dissimilar pairs" ("Encycl. Brit.," ed. ix. Art. "Mollusca"). The "word-mongerers" are here marking "a turning-point in advance."

Madras, April 20. A. G. BOURNE.

"On the Establishment of the Roman Dominion in South-East Britain."

IN my article on the above subject printed in NATURE, vol. xxxv. p. 562, I have briefly alluded to the ridiculous mutiny of the Roman soldiers. I ought to have added (from Dio) the relation of the following incident, which terminated the mutiny:—

"Taking courage, because a brilliant meteor rising in the east passed across to the west, to the part to which they were making their course, they descended on the island."

That is, the Romans descended from an easterly part of Europe upon Britain.

This agrees with the course which in my former letter I assigned as most probable; namely, that the Romans sailed from the mouth of the Scheldt to Southend. G. B. AIRY.

The White House, Greenwich, May 18.

FLORA OF CHRISTMAS ISLAND.

THE Hydrographer of the Admiralty has kindly forwarded to Kew, as he has stated in his note in NATURE for May 5, p. 12, the botanical specimens collected during the visit of H.M.S. *Flying-Fish* to Christmas Island. They were unfortunately, as explained by Capt. Maclear, a mere residue of the collection which was obtained. The examination of a better preserved and more extensive one would be interesting, as the flora is evidently of a less common-place kind than that generally met with in coral islands.

In all, twenty-four species admitted of approximate determination. Of these five were ferns, all widely-spread species. Of the remaining nineteen flowering plants five are also probably identical with widely-distributed species, and they occur in the Cocos or Keeling Islands between which and Java Christmas Island lies. The much more limited flora of these islands is only known from the collections of the late Mr. Darwin, and of Mr. H. O. Forbes. Of the remaining fourteen species at least six must be set aside, the specimens being too imperfect to be more than approximately determinable. Of the rest, two, a *Vitis* near *V. pedata*, Vahl, and an *Ehretia*, may, in Prof. Oliver's opinion, possibly be new; the teak (*Tectona grandis*, L. f.) occurs generally in the Malayan Archipelago; *Euphorbia Chamissonis* is interesting as a Polynesian type; fruits of *Barringtonia* are thrown up universally on shores in the Malayan waters; *Terminalia Catappa*, L., is found pretty well everywhere in the tropics; the remaining two suggest no special remark.

The collection unfortunately throws little light on the composition of the dense arborescent vegetation with which Capt. Maclear found it to be covered. Teak probably forms large trees. *Cordia subcordata*, Lam., which occurs also in the Cocos-Keeling Islands, and, according to Mr. H. O. Forbes, originally covered them abundantly,[1] is known there as "iron-wood," and is no doubt one of the iron-wood trees recognized by Capt. Maclear in Christmas Island. It is widely distributed throughout the Malayan Archipelago, and extends to the Philippines and some of the Pacific islands.[2]

On the whole, it can hardly be doubted that Christmas Island has been stocked with its flora by the agencies described by Dr. Guppy, and worked out by Mr. W. B. Hemsley in the "Botany Report of the Voyage of H.M.S. *Challenger*" (vol. i. part 3, p. 310): "Winds and currents drift to their shores the fruits and seeds of the littoral trees which ultimately form a belt, whilst the fruit-pigeons disgorge the seeds or fruits of those often colossal trees which occupy the interior."

The former agencies brought no doubt *Barringtonia*, *Hibiscus tiliaceus*, *Terminalia*, *Cordia subcordata*, *Ochrosia parviflora*, and *Pandanus*. Carpophagous birds are elsewhere known to bring a profusion of fruits of palms, nutmegs, *Euphorbiaceæ* and *Laurineæ*, and other arborescent species. Upon this element in the flora of Christmas Island the collection, as already remarked, throws insufficient light. The flora of Java is still but imperfectly known, and though there is no reason to believe that that of Christmas Island contains any absolutely endemic species, it would not be surprising if a careful examination yielded many plants new to science which have yet to be ascertained from the larger contiguous island, from which they have been derived.

W. T. THISELTON DYER.

THE JOURNAL OF THE ROYAL MICROSCOPICAL SOCIETY—RETROSPECTIVE AND PROSPECTIVE.

THE month of March 1878 will ever remain memorable in the annals of microscopy in this country, for it marked the regeneration of the Journal of the Royal Microscopical Society, the most conspicuous feature of which was the introduction, for the first time, of a systematic record of current researches under the title of "Notes and Memoranda." Now that the period of editorship which worked the change is fast approaching its decade, we would wish to review the position, in anticipation of the introduction of still further modifications which, it is to be assumed, the editors will adopt on entering upon a second period.

We read in the preface to the first volume that the "Notes and Memoranda" are intended to present a summary of what is doing throughout the world in all branches of microscopical research. Whilst extracts from English publications will not be excluded, preference will be given to those of foreign countries, as being less easily accessible. Amongst these will be included the Transactions and Proceedings of the Academies of the United

---

[1] "Naturalist's Wanderings in the Eastern Archipelago," pp. 28, 29.

[2] Mr. H. O. Forbes (*l.c.* pp. 26, 27) gives a curious account of the way in which the labours of a crab turn the white calcareous fore-shore of coral islands into "a dark vegetable mould." They do this by burying systematically particles of vegetable *débris*; by scooping away the soil beneath them they lower down even large branches of trees. The ground thus enriched is fitted for occupation by plants; and as Mr. Forbes particularly noticed that they carry "down also the newly-fallen seeds of the iron-wood" these industrious factors in the economy of a bare coral island not merely prepare the soil but also plant it.

©1887 Nature Publishing Group